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08/327,882 10/20/94 FIN

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EXAMINER	
BLODGETT, T	
ART UNIT	PAPER NUMBER

19

1107
DATE MAILED:

04/09/96

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 2/15/96 ☒ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), — days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> |

Part II SUMMARY OF ACTION

1. ☒ Claims 1, 2, 7, 8 are pending in the application.
Of the above, claims 3-6 are withdrawn from consideration.
2. ☒ Claims 3-6 have been cancelled.
3. ☐ Claims are allowed.
4. ☒ Claims 1, 2, 7, 8 are rejected.
5. ☐ Claims are objected to.
6. ☐ Claims are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on . Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on , has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed , has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. ; filed on .
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 7, and 8 are rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of Gutierrez [US 5,056,749].

The admitted prior art teaches providing a silicon substrate (10); forming a field oxide (3), junction layer (2), and polysilicon gate electrode (5); forming a first insulating layer (6) over the structure; forming a patterned polysilicon conductive layer (7) on the first insulating layer; forming a second insulating layer (8) over the first; forming holes in the first and second insulating film to the gate and junction followed by filling the holes with CVD tungsten (9) (Figures 1A, 1B). The admitted prior art doesn't teach filling the first holes with selective CVD tungsten prior to forming the second insulating layer or a second step of forming selective CVD tungsten in the second insulating layer via holes.

Gutierrez teaches forming a field oxide region (122) a junction layer (116) and a patterned polysilicon conductor (114) over a semiconductor substrate (140), forming an insulating layer (124 or 230), forming contact holes (110, 112) to the poly conductor and the junction layer, selectively forming tungsten (226, 228) in the contact holes, forming a second insulating layer (232) on the first insulating layer (Figures 7 and 8, col 4, line 35-col 5, line 18), and repeating the process to form contact vias (224) and metal interconnection lines (220,216) (col 5, lines 18-21), where the process doesn't require planarization and can be

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performed on an uneven surface (col 5, lines 39-53). It can be seen from the Figures that the holes are of a substantially even depth in a given insulating layer. Gutierrez teaches forming the polysilicon conductor (114) which extends over a region isolated by field oxide regions and teaches the device may be an NMOS (Figure 7, col 4, lines 54-65). Therefore it seems that the polysilicon (114) may be a gate electrode but this is not completely clear.

It would have been obvious for one with ordinary skill in the art in the process of the admitted prior art to have filled the holes in the first insulating layer with selective CVD tungsten prior to forming the second insulating layer and a second step of forming selective CVD tungsten in the second insulating layer via holes for the advantages taught by Gutierrez.

Applicant's arguments filed 2/15/96 concerning the 35 U.S.C. § 112 first paragraph rejection of the action mailed 9/12/95 is found to be persuasive.

Applicant's arguments filed 2/15/96 concerning the 35 U.S.C. § 103 rejection of the action mailed 9/12/95 is moot in light of the new grounds of rejection.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT

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MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Applicant may respond to this office action by facsimile transmission as per 37 CFR 1.6(d) (Also see MPEP 502.01). Applicant is directed to 58 FR 54494 (October 22, 1993) and 1156 Off. Gaz. Pat. Office 61 (November 16, 1993). Also see 37 CFR 1.4(f). The transmission should identify the serial number of the application, art unit 1107 and the name of the examiner in charge of the application as indicated below. The facsimile numbers for group 1100 are (703)305-3599 and (703)305-3600.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thomas Bilodeau whose telephone number is (703) 308-1090.

Any inquiry of a general nature or relating to the status of the application should be directed to the Group Receptionist whose telephone number is (703) 308-0661.


GEORGE FOURSON
PATENT EXAMINER
GROUP 1100


Tbilodeau
March 28, 1996